REMARKS

By the above amendment, the specification and claim 10 have been amended in a manner corresponding to Article 34 amendments submitted in the PCT application, which due to the format of the English translation thereof would not be considered in the national stage application. Further, the abstract has been replaced by a new abstract.

Also submitted herewith is a substitute sheets of drawings for Figs. 16, 22 and 25 corresponding to the amended drawings in the PCT application. Approval of such substitute sheets of drawings is requested.

Applicants also submit herewith an Information Disclosure Statement.

Please charge any shortage in the fees due in connection with the filing of this paper, to Deposit Account No. 01-2135 (1089.39666X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

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MARKED UP COPY OF SPECIFICATION AND CLAIMS

Page 23, paragraph bridging pages 23-25 has been amended as follows:

The invention described in claim 10 is a visual device comprising array operation units arranged in the shape of a lattice in a data processing device that realizes means for normalizing object areas, wherein each of the array operation units comprises: means for initializing the array operation unit; means for finishing processing if there is not an object-area image or a digital image to input any more; means for inputing a band-pixel value in the object-area image and each of band-pixel values in the digital image; means for generating a band-pixel value in an updated object-area image and each of band-pixel values in an updated digital image by separating the band-pixel values in the object-area image and each of the band-pixel value in the digital image; means for converting a transfer value derived from the updated object-area image to a band-pixel value in a transfer-value image by operating imagery of position; means for generating a band-pixel value in a transferable image according to a redundant number at a transfer position directed by the pixel-band value in the transfer-value image; means for transfering the band-pixel value in the updated object-area image to a transfer position according to judgement in the transferable image; means for transfering the band-pixel value

in the updated digital image as the band-pixel value in the updated object-area image was transfered; means for complementing the band-pixel value in the updated object-area image not included in the object areas with the average of neighbor band-pixel values within the object-areas; means for complementing each of the band-pixel values in the updated digital image as the band-pixel value in the updated object-area image was complemented; and means for outputing each of band-pixel values in a normalized image generated after complementing the updated digital image. In short, this is the enforcement form of an algorithm for realizing a function generating the normalized image, which is offered by the array operation units, by using digital technology. After the array operation units were arranged in the shape of a lattic, followed by connecting the neighbor array operation units each to each, and by initializing each parameter in the array operation units, the present invention inputs the object-area image and the digital image every pixel if necessary, and carries out a sequence of processes from separating the object-area image and the digital image to outputing each band-pixel value in the normalized image, one by one. The present invention repeats a sequence of these processes until the object-area image and the digital image comes not to be inputed. Since the present invention can use a general processor, the parameter can be corrected easily. Note that the array operation units does not always have to

carry out waiting for receiving some neighbor pixels in each type of the images exactly, which are sent from the neighbor array operation units. Because the array operation units waiting for receiving can use a pixel value equivalent to zero instead of the band-pixel values in each type of the images, which can not be received from the neighbor array operation units. Although a pixel in each type of the images generated by the array operation units may have a little noise in this case, each means in the present invention absorbes almost all of the noise. Border processing and time-out processing are realized simultaneously and easily by the means for superseding by this band-pixel value equivalent to zero.

Page 39, the second paragraph has been amended as follows:

Suppose that the image vibration means 13 inputs the digital image 111 from the image [capturing] memorization means 12. The image vibration means 13 transfer the whole digital image 111 or the digital image 111 every one pixel as a still object 3 moves the distance between about three pixel in the digital image 111. If the image vibration means 13 can output all pixels of the digital image 111 in parallel, communication from the image vibration means 13 to the edge-information generation means 14 can carry out in parallel every one pixel.

Page 88, the second paragraph has been amended as follows:

At step 1708, AOU_{ij} judges whether the transfer times representing the repeat times from step [1705] 1706 to step 1707 achieve the directed times or not. If the transfer times do not achieve the directed times (step 1708: NO), this algorithm returns to step 1706. If the transfer times achieve the directed times (step 1708: YES), this algorithm goes to step 1709. Note that the directed times are derived by the size of the rough edge-information image 113, the size of the object represented by the rough edge information 112, and the number of neighbors q. In a case that some parameters are set to specific numbers corresponding to the aim of use, there is no problem even though the directed times are set to more than the necessary times. If the directed times are too much, however, AOU_{ij} takes much time to detect the position and the size of the object.

Page 91, the second and third paragraphs have been amended as follows:

At step 2705, AOU_{ij} separates the pixel on the column i and the row j of the object-area image 142 and the pixel on the column i and the row j of the digital image 111. This is done for AOU_{ij} to process the pixel on the column i and the row j of the object-area image 142 and the pixel on the column i and the row j of the digital image 111 as two pixel of

independent images, respectively. If the pixel on the column i and the row j of the object-area image 142 and the pixel on the column i and the row j of the digital image 111 are beforehand separated and are then inputed, AOU_{ij} carries out nothing. The object-area image 142 and the digital image 111 are copied to the updated object-area image and the updated digital image, respectively.

At step 2706, for each band-pixel value of the updated object-area [142], AOU_{ij} calcurates a transfer value, according to the function $R_{ij1}(x)$, by communicating with neighbor array operation units 40. The band-pixel value representing the transfer value regards as a band-pixel value of a transfer-value image.

Pages 91 and 32, the paragraph bridging such pages have been amended as follows:

At step 2707, for each band-pixel value of the updated object-area image [142], AOU_{ij} can find a transfer-place band-pixel value possible to transfer according to the function $H_{ijk}(X,y)$, by communicating with neighbor array operation units 40. The value representing whether the transfer-place band-pixel value is a transfer place possible to transfer or not regards as a band-pixel value of a transferable image.

Page 92, the second and third paragraphs have been

amended as follows:

At step 2708, for each band-pixel value of the updated object-area image [142], AOU_{ij} transfers it to the transfer place according to the function $U_{ijk}(X,y)$, by communicating with neighbor array operation units 40. The transfered band-pixel value regards as a band-pixel value of a new updated object-area image [142].

At step 2709, for each band-pixel value of updated digital image [111], AOU_{ij} transfers it to the transfer place according to the function U_{ijk} (X,y), by communicating with neighbor array operation units 40. The transfered band-pixel value regards as a band-pixel value of a new updated digital image [111].

Pages 92 and 93, the paragraph bridging such pages have been amended as follows:

At step 2711, for each band-pixel value of the updated object-area image [142] which has been finished transfering, AOU_{ij} complements it with the average of its neighbors according to the function $V_{ijk}(x,y)$, by communicating with neighbor array operation units 40. Note that both x and y are dealt as the updated object-area image [142]. The complemented band-pixel value regards as a band-pixel value of a normalized updated object-area image.

Page 93, the second paragraph has been amended as

follows:

At step 2712, for each band-pixel value of the updated digital image [111] which has been finished transfering, AOU_{ij} complements it with the average of its neighbors according to the function $V_{ijk}(x,y)$, by communicating with neighbor array operation units 40. Note that x is dealt as the updated digital image [111], and y is dealt as the updated object-area image [142]. The transfered band-pixel value regards as a band-pixel value of a normalized updated digital image [145].

Page 94, the second paragraph has been amended as follows:

At step 2715, AOU_{ij} outputs a band-pixel value of the updated digital image as a band-pixel value of the normalized image 145. This algorithm then returns to step 2703.

IN THE CLAIMS:

Claim 10 has been amended as follows:

10. (as amended) A visual device comprising array operation units arranged in the shape of a lattice in a data processing device that realizes means for normalizing object areas, wherein each of said array operation units comprises:

means for initializing said array operation unit;

means for finishing processing if there is not an object-area image or a digital image to input any more;

means for inputing a band-pixel value in said object-area

image and each of band-pixel values in said digital image;

means for generating a band-pixel value in an updated object-area image and each of band-pixel values in an updated digital image by separating said band-pixel values in said object-area image and each of said band-pixel value in said digital image;

means for converting a transfer value derived from said updated object-area image to a band-pixel value in a transfer-value image by operating imagery of position;

means for generating a band-pixel value in a transferable image according to a redundant number at a transfer position directed by said pixel-band value in said transfer-value image;

means for transfering said band-pixel value in said updated object-area image to a transfer position according to judgement in said transferable image;

means for transfering said band-pixel value in said updated digital image as said band-pixel value in said updated object-area image was transfered;

means for complementing said band-pixel value in said updated object-area image not included in said object areas with the average of neighbor band-pixel values within said object areas;

means for complementing each of said band-pixel values in said updated digital image as said band-pixel value in said updated object-area image was complemented; and

means for outputing each of band-pixel values in a normalized image generated after complementing said updated digital image.